IT Governance and Organizational Agility: A Study based on Platform Organizing Logic Perspectives

Completed Research Paper

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ABSTRACT

Managing IS changes is critical for IT governance decisions. Thus, firms should be concerned IT agility in order to respond to uncertain changes in a dynamic environment. In this case study, we analyze the course of IT governance decisions to understand how the case company uses IT to enable organizational agility. Further, we adopt platform organizing logic perspectives to identify factors associated with this issue. These factors are classified as collaboration requirements and cohesion forces. We also identify four key principles used by the case company for making their IT governance decisions to sustain their IT agility: balance between collaboration requirements and cohesion forces, autonomy of IS integration and scalability, simplification of business processes by digitized process capital, and entrepreneurial alertness for absorbing new IT capabilities. These findings illustrate how to apply platform organizing logic to IT governance decisions and also respond to the call for research in reframing the role of IT in shaping organizational agility through digital options.

Keywords

Platform organizing logic, organizational agility, IT agility, IT governance.

INTRODUCTION

Organizational agility is the ability of firms to sense environmental change and respond readily (Goldman, Nagel, & Preiss, 1995). Past research indicates that IT can enable organizational agility by speeding up decision making, facilitating communication, and responding quickly to changing conditions (Lucas & Olson, 1994) and by building digital options (Sambamurthy, Bharadwaj, & Grover, 2003). As such, previous studies on organizational agility focused mostly on how IT capability enhances organizational agility in business environments (Clark, Cavanaugh, Brown, & Sambamurthy, 1997; Overby, Bharadwaj, & Sambamurthy, 2006; van Oosterhout, Waarts, & Hillegersberg, 2006; Weill, Subramani, & Broadbent, 2002). These studies indicate that IT capability is critical for a firm to enhance organizational agility and sustain competitive advantage. However, other scholars argue that IT may also impede organizational agility (Allen & Boynton, 1991; Gosain, Malhotra, & El Sawy, 2005; Lucas & Olson, 1994; Overby et al., 2006; Weill et al., 2002). For example, van Oosterhout et al. (2006) observed that inflexible legacy IT systems result in rigid IT architecture and impede organizational agility. These mixed results indicate that some factors on this issue still have not been explained very well or included. Therefore, the role of IT in organizational agility still merits discussion (Lu & Ramamurthy, 2011).

It is imperative to extend the current discussion to the IT governance level because in order to fully reap the expected rewards of IT, it is essential to understand how IT should be governed and structured (Bowena, Cheungb, & Rohdeb, 2007; Haes & Grembergen, 2008; Peterson, 2004; Weill & Ross, 2004). IT governance is critical in establishing formal and informal relationships among employees and defining mechanisms for formalizing rules and operating procedures (Weill & Ross, 2004). Therefore, drawing on the lens of IT governance would provide us a more systematic framework to understand the role of IT in organizational agility.

Despite substantial research on both IT governance and the role of IT in organizational agility, there have been relatively few studies that combined these two areas of inquiry to examine how IT governance influences organizational agility. Therefore, the objective of this study is to examine how a firm implements IT governance arrangements to achieve IT agility and in turn enable organizational agility via an in-depth case study within one organization. This approach provides a more comprehensive view to better understand the dynamic process of implementing IT governance arrangements.

In operationalizing IT governance arrangements, we chose the notion of platform organizing logic proposed by Sambamurthy & Zmud (2000) to help us understand how firms implement their IT governance arrangements to achieve IT agility and enable organizational agility. Platform organizing logic offers managerial rationale for creating arrangements of capabilities

and relationships that allow organizations to respond to challenge and exploit opportunities (Agarwal & Sambamurthy, 2002; Sambamurthy & Zmud, 2000). Specifically, the platform concept explains how organizations can promote IT capabilities by combining and recombining resources through the development of various mechanisms (Sambamurthy & Zmud, 2000).

As such, drawing upon the platform organizing logic and agility literature, we address current research gaps by asking the following question: How do firms develop and implement their IT governance arrangements to achieve the IT agility necessary to respond to the imperatives of business and technology in a dynamic environment?

LITERATURE REVIEW

Organizational Agility and IT

Organizational agility is the ability of firms to cope with rapid and uncertain changes and thrive in a competitive environment of continuously and unpredictably changing opportunities (Brown & Eisenhardt, 1997; Goldman et al., 1995; Overby et al., 2006; Sambamurthy et al., 2003). These uncertain changes can either originate from the organization's external environments (e.g., customer needs, supplier requirements, or emerging technologies) or originate internally (e.g., new systems implementations or changes of organizational structure) (Overby et al., 2006). Thus, firms with agility can detect and seize market opportunities by assembling requisite assets, knowledge, and relationships with speed and get ahead of their competitors (Goldman et al., 1995; Sambamurthy et al., 2003). Sambamurthy et al. (2003) categorized organizational agility into three interrelated capabilities: customer agility, partnering agility, and operational agility.

Customer agility is customers' cooperation in exploring and exploiting opportunities for innovation and competitive action moves(Sambamurthy et al., 2003). Customer agility enables firms to leverage the voice of customers to seize market opportunities and maintain customer relations (Kohli & Jaworski, 1990; Sambamurthy et al., 2003). Partnering agility is the ability to utilize the assets, knowledge, competencies of supply chain partners via a series of alliance, partnership, and joint ventures (Sambamurthy et al., 2003; Venkatraman & Henderson, 1998). Partnering agility enables firms to build strategic and virtual partnerships to explore opportunities for competitive actions and innovations (Sambamurthy et al., 2003). Operational agility is firms' ability to accomplish efficient, accurate, and effective business process to exploit opportunities for competitive actions and innovations(Sambamurthy et al., 2003). This agility enables firms to redesign existing processes and create innovative processes in the face of change (Overby et al., 2006; Sambamurthy et al., 2003). Together, agility reflects the ability of firms to launch more competitive actions and innovations than their competitors (Sambamurthy et al., 2003).

IT plays an essential role in enabling organizational agility by building the digital options, providing timely processing, and facilitating communication (Lucas & Olson, 1994; Sambamurthy et al., 2003; Weill et al., 2002). For example, IT provides opportunities for gaining customers' voices more efficiently, enhancing virtual customer communities, and in turn enabling customer agility (Nambisan, 2002; Sambamurthy et al., 2003). However, IT may also impede organizational agility (Allen & Boynton, 1991; Cameron, 1986; Orlikowski, 1992; Orlikowski & Robey, 1991). Rettig (2007) noted that enterprise systems that focus on data integration may produce rigidity and barriers to change because changes involving technology are uncertain and complex. Additionally, given the duality of technology, IT can both enable and impede for organizational agility (Orlikowski, 1992; Orlikowski & Robey, 1991; van Oosterhout et al., 2006). Thus, the role of IT in enabling organizational agility still needs further exploration (Lu & Ramamurthy, 2011).

Platform Organizing Logic

Organizing logic is the managerial rationale for designing and evolving organizational arrangements to respond to business and strategic imperatives (Sambamurthy & Zmud, 2000). Traditionally, organizing logic for IT activities has focused considerably on governance structure for managing IT infrastructure and IT applications and use. That is, firms choose from three dominant governance architectures – centralized, decentralized, or federal – to manage IT activities (Dixon & John, 1989). However, given the complexity of IT management in the digital era some scholars have questioned the salience of governance structure as the solo factor to organize IT activities (Agarwal & Sambamurthy, 2002). Thus, Sambamurthy and Zmud (2000) proposed platform organizing logic as a better alternative for managing IT activities. Platform organization is capable of structuring flexible combinations of resources, routines, and structures in response to business opportunities and challenges (Ciborra, 1996). Thus, platform organizing logic provides firms with flexible arrangements of capabilities and relationships to be able to exploit specific business opportunities (Sambamurthy & Zmud, 2000).

Platform organizing logic includes three building blocks: IT capabilities, relational architectures, and integration architectures (Sambamurthy & Zmud, 2000). To start with, a firm needs to determine its IT capabilities to decide the most suitable mechanism for managing its IT activities. IT capabilities are "combinations of IT-based assets and routines that support business conduct in a valued-adding ways" (Sambamurthy & Zmud, 2000). Thus, IT capabilities represent the degree to which a firm can deploy its IT resources efficiently and effectively to exploit business opportunities.

Relational architectures represent dynamic arrays of intra-and inter-organizational relationships to source, configure, and deliver IT capabilities (Sambamurthy & Zmud, 2000). Given the fact that firms utilize a combination of centralization, strategic alliance, and asset leasing to manage their global IT activities, relational architectures provide greater flexibility and agility in configuring and deploying IT value innovations (Sambamurthy & Zmud, 2000).

Integration architectures are organizational overlays to connect an organization's relational architectures together into a cohesive organization (Sambamurthy & Zmud, 2000). There are two major purposes of integration architectures: coordination and identity (Kogut & Zander, 1996). Coordination helps firms to realize the business value of IT through the orchestrated interplay of IT and business capabilities (Barua & Mukhopadhyay, 2000), and identity helps stakeholders to realize the character, meaning, and definition of IT functions and defines the intra-organizational boundaries of IT functions (Sambamurthy & Zmud, 2000). Thus, we argue that platform organizing logic is a better alternative for realizing the role of IT in enabling organizational agility because it provides a more systematic viewpoint for examining how IT integrates with other important factors such as culture, structure, process, or people.

METHODOLOGY

Since the purpose of this study was to gain greater insights into an area not well understood in practice and not well explained by theory, a case study is the best way to explore the phenomenon of IT governance and organizational agility (Benbasat, Goldstein, & Mead, 1987; Yin, 2003). This approach allowed us to develop our understanding of how firms implement their IT governance arrangements to enable IT agility, and then to investigate the effects of this on organizational agility. The rich, often sensitive data required for this research encompasses a process view along with the study of multiple embedded units (Yin, 2003). Thus, this study utilizes a naturalistic research approach.

The company selected for the case study site was chosen for several reasons. First, the company relies heavily on IT as a strategic asset to facilitate their expansions and rapidly respond to market demand. Due to the IT-enabled collaboration across supply chains, the case company has transformed from an original equipment manufacturer (OEM) without their own brands to an industry leader with a globally known brand. Thus, the case company provided us a perfect context to understand how they implemented their IT governance arrangements to leverage business value of IT. Second, in order to survive in a highly competitive marketplace, top managers of this company realized that organizational agility was essential to their success. Therefore, this provided us a great opportunity to examine an organization that considers the ability to launch more competitive actions and innovations with speed critical to their performance.

This study focused on events associated with IT governance arrangements in a case company, which is known for its rapid growth and agile business strategy. Thus, it is essential to consider both senior business executives' and IT directors' perspectives to understand completed processes underlying IT governance decisions. The process of data collection started in July 2011 and ended in November 2012. Multiple methods of data collection were utilized to provide triangulation and increase reliability, including interviews, internal documents, public information, and historical reports about IS developments and IT governance decisions. For each interview, we conducted a grand tour technique (McCracken, 1998; Spradley, 1979), where the participants were asked to recall in open-ended conversation memories of personal experiences regarding IS developments and IT governance decisions. The researchers interviewed six employees involved in the supply chain management (SCM) projects, including the CIO, the IT manager, ERP administrator, the financial manager, the quality control manager, and the material control manager. All interviews were conducted on site at the company at their requests. Each interview was tape-recorded, with additional notes being taken when necessary, and then transcribed. A total of 14 interviews were conducted, lasting for a total of about 24 hours.

CASE STUDY

Company Background

Founded as a seller of memory products, the case company began expanding its market by producing DRAM memory modules and establishing its brand. Shortly after that, it became the largest producer of DRAM modules. In 2005, the case company branched out into the flash memory product line, and becoming the second largest supplier of flash memory in just one year. With global headquarters in the U.S, the case company employs more than 4,000 people worldwide and serves an international network of distributors, resellers, retailers and OEM customers on six continents. Regarded as one of the top 50 largest private companies in the U.S. by Fortune magazine in 2012 (Murphy & DeCarlo, 2011), the case company's corporate culture is built on tenets of respect, loyalty, flexibility and integrity.

Due to the standardization of memory products, the market for memory products is highly competitive. In addition, a variety of memory products with improved functions has created huge impacts on supply and demand, resulting in dramatic changes in price. In order to survive in this competitive marketplace, it is not enough for memory module manufacturers to only focus

on actively establishing their brand images and building excellent distribution channels. Maintaining close relationships with upstream suppliers and efficient supply chain management become critical to firm profits.

The case company's business strategy is agility. That is, this company needs to cope with dramatic changes in price and high inventory risk with rapid responses and effective decision making. In order to employ this agility strategy, the company's organizational structure has to be efficient and elastic. In other words, this company pays more attention to operational performance than the structural form of the organization. IT also plays a critical role in facilitating business processes and decision making to achieve the goal of agility.

However, the company's rapid growth and its agility strategy have brought considerable challenges to logistic support and the implementation of information systems. For example, they faced an integration issue with their ERP systems and client/server software packages (e.g., CRM, B2B solution). Additionally, the case company's unique manufacturing decisions and management models mean that its IT department has to rapidly develop various small information systems to respond to operational requirements from each business unit. As such, information systems developed in different types of platforms and implemented by various development tools create a heterogeneous IT environment. Thus, at the beginning of his term the CIO faced a series of critical decisions: How to integrate a number of different information systems to quickly respond to ongoing requirements of the firm with a streamlined IT department?

Because it was impossible to simultaneously implement these rapid changes and do long-term planning of IT infrastructure, the company's IT department decided to customize their existing ERP systems and utilized SOA technology to integrate rapidly with modules of software packages. As the case company's CIO said, "*Time to value is the most critical to us. We have no time to re-build up from the bottom. Thus, we decided to adopt the BPM (Business Process Management) approach to connect to the back-end to achieve our goals quickly. Our long-term objective is to establish a completed SOA environment*".

SCM Project and Implementation of SOA

The case company produces over 2000 memory products for sell to over 100 countries with more than 3000 sales outlets around the world. Additionally, this company also provides contract manufacturing and SCM services for semiconductor manufacturers and system OEMs. As a result, the business model is extremely complicated.

In the face of a high degree of market uncertainty and price volatility in the memory industry, being able to respond in the shortest time to different market and product needs becomes critical for success. Thus, excellent supply chain management is essential for survival of the case company.

All C-level executives believe that the capability of global logistics management is the main source for maintaining their competitive advantage. Thus, they designated the Deputy Director of the production department to initiate the project of the SCM system implementation. In the past, the production planner made logistics management decisions by ad-hoc decisions. However, given the complexity of SCM to date, the case company decided to adopt the SCM system to provide more accurate and efficient analysis.

Considering the integration limit of existing ERP systems, the CIO hoped to adopt best practices of the supply chain planning solution to resolve current integration issues. At the same time, the CIO also evaluated the possibility of replacing their existing rigid ERP systems. Their ultimate goal was to adopt a complete solution offered by a single software vender to avoid potential integration issues.

The case company started adopting SCM systems in 2005. The US headquarters provided SCM educational training and consultations for their top managers to build consensus and clarify project objectives. Next, the CIO was in charge of implementing the SCM project. The case company's CEO fully authorized the CIO to work on the project. As the subsidiary IT executive commented, "*The CIO not only reports directly to the CEO but also is the director who can make critical decisions. Our CEO realizes the importance of IT. Thus, the CEO is willing to invest a substantial amount of money in emerging technologies to improve our competitive advantage*."

Although top managers highly supported and relevant employees became deeply engaged in the project, the implementation of the SCM project was not smooth in the early stages. The CIO mentioned two major reasons about these unexpected results. The first reason was due to the mechanism for calculating the optimal solution. The SCM system the case company adopted calculated the optimal solution based on on-hand inventory, capacity, and market needs. This mechanism contradicted the case company's business philosophy - sharing the inventory risk with the upstream vendors. Thus, when supply exceeded demand, the case company still continued to take orders to relieve upstream vendors' burdens caused by overcapacity. The company's unique business philosophy caused this outsourcing SCM system to fail to adjust agilely to reach their expected results.

In addition, this SCM system needed to integrate with other system modules offered by the same software vender. Limited to the unique information system platform, this SCM system also had integration issues with the case company's existing ERP systems and manufacturing systems. Customized integration solutions may help this company resolve these problems but, such customized solutions are costly.

To resolve integration and maintenance issues caused by the SCM system and other large software packages, the case company adopted SOA technology in 2008. With the premise of not significantly changing packaged software, the case company wanted to establish a separate business process management (BPM) layer above those systems and wanted to transfer information between them through the implementation of SOA. They expected that this SOA would allow them to support agile changes of business activities more efficiently.

The logic behind this decision was to build a long-term and flexible information system framework based on the perspective of the enterprise management platform. The company could then rapidly adopt current well-accepted software products into their own information systems. More importantly, the case company could still own the autonomy of system developments and maintenance. That is, they could extend their system's functionalities without being restricted by the different system architectures offered by each software vendors.

The adoption of SOA technologies was not only intended to address technical integration issues, but was also driven by the case company's agility strategy. The best practices embedded in packaged software are common management rules adopted by most companies. These best practices may not match 100% with the case company's situation. Thus, the case company decided to adjust these best practices in accordance with their business needs instead of fully complying with the existing functionality of software packages.

In addition, in order to achieve the case company's business philosophy and quickly respond to market needs, the case company developed their unique management models. These management models involve the ad-hoc decisions based on employees' working experience, and they sometimes contradict the standardized processes of packaged software.

To conclude, the first criterion to the case company for making IT governance decisions is the autonomy of technology. The second is their long-term return on IT investment. Thus, the case company hopes to adopt open technologies for their system developments. In this way, they would not be restricted by a single vendor's specific technology platforms. Moreover, this company also emphasized how to reduce implementation and follow-up maintenance costs. Thus, they decided to study management and design concepts from large system vendors so they would be able to do in-house development or outsourcing instead of directly buying packaged software from these vendors in the future.

DATA ANALYSIS AND FINDINGS

Using Platform Logic Perspectives as an Analysis Framework of IT Governance

Platform organizational logic focuses on the "platform" metaphor to analyze how IT governance decisions help to build a flexible structure for allocating resources and supporting business processes (Sambamurthy and Zmud, 2000). This flexible structure is not subject to the organizational changes.

Thus, drawing upon Sambamurthy and Zmud's (2000) platform organizational logic, we coded and categorized interview data based on four major components of platform organizational logic: IT capabilities, relational architecture, integration architectures, and success metrics. We then analyzed how these components interact with IT governance decisions. The summarized result is represented in Table 1. Next, we arrived at our research findings by repeated analysis between our coded results and literature.

For the case company, IT just played a supporting role in improving their operational efficiency at the early stage. However, due to the increasing complexity of supply chain management, IT evolved to an important strategic role in helping suppliers and customers transfer sales and production information.

Given the complexity of supply chain management, the case company's IT implementation needs to adjust quickly to respond to business needs and to exploit innovative opportunities. Thus, the CIO originally was planning to establish proactive information systems to maintain their sustainable competitive advantage. However, the CEO responded to the CIO that "*building information systems which can react rapidly to uncertainty instead of building proactive information systems."*

As the CIO recalled, "*I finally realize the meaning of this suggestion after working over ten years in this company. Due the unique business philosophy of our firm, reacting rapidly seems be a better alternative to maintain our leading position.*" However, how to establish information systems with the objective of reacting rapidly is still a challenging issue.

Due to the rapid development of the firm, information systems are becoming increasingly large and complicated. As the CIO noted, *"Business groups hope you react rapidly. But they do not tell you how to react rapidly. Where does agility come from? You need to try various ways to achieve their goal and avoid the potential risk."*

The CIO's initial decision was to adopt large software packages quickly to serve various requirements from each business unit. However, in order to fully utilize built-in functionality of software packages, the case company's IT architectures must consist of technical architectures of these software packages. This limitation would make the case company lose the autonomy of their technology. Thus, the case company decided to do in-house development and outsourcing to offset the deficiency of software packages.

As the CIO commended, "*It is impossible to throw all of your current enterprise systems away and convert all of these systems into a single system. You will never expect that you can adopt products from only one single vendor to fulfill all of your business needs. Thus, you must know and learn how to handle a heterogeneous environment.*"

SOA technology provides a great opportunity for the case company to maintain the serviceability of each individual system and reconcile cross-system integration issues. As the CIO noted, "*SOA is the best candidate for us to reach the needed flexibility. Under the framework of BPM, SOA adds two more layers on the application layer and builds the flexibility outside of this framework. This way will also not change the architectures of existing software packages.*"

The discussion above mentions the required IT capabilities for the case company and how to allocate resources to get these required IT capabilities (relational architectures). However, how to effectively guide managers and employees to deeply engage in the focused areas or projects still relies on other important management mechanisms, which are the integration architectures of platform organizational logic.

The case company's organizational structure is extremely flat. All important business or systems are developed through multinational or cross-functional teams. The executives prefer to let these multinational teams to participate in the meeting, learn, and discuss face-to-face instead of using the video conference. These multinational or cross-functional teams work together synchronously in all phases of a project, meeting for a variety of purposes beyond status reviews. Thus, this face-to-face environment facilitates knowledge transfer and therefore highly reduces the redundant processes and systems.

Moreover, the case company also adopted SCRUM methodology – one agile software development methodology – to reduce software development life cycle time and resolve the difficulty of responding to continuous system requirements. The SCRUM methodology allows system developers and users to cooperate very well. Each development team can evaluate its risks and control the progress more effectively by using an iterative and incremental methodology. As the CIO mentioned, "*The team adopting the SCRUM methodology is highly cohesive and productive. The managers are not allowed to reallocate developers during the period of system development to ensure developers' high productivity.*"

The success of the SCRUM methodology is due to the case company's unique culture. The CEO views each employee as a family member and an important asset. The case company is known for its good working environment and rewarding system. In addition, this company also highly encourages their employees to participate in various social activates to create a more cohesive environment.

Although the SCRUM methodology can quickly develop the system to meet current operational needs, it cannot guarantee that it can define a flexible enterprise service object by applying SOA. Thus, the CIO provides various training opportunities to their IT staff and encourages IT staff to take the whole responsibility for the project. Besides, the CIO also asks IT staff to fully understand business processes and to design flexible operational processes that can be applied in multiple systems.

IT capabilities	Relational architectures	Integration architectures	Success metrics
● Operational excellence ● Value-chain extension ● Solutions delivery	● Adopting a number of large software packages quickly while emphasizing the capability of in-house development to support organization's agility ● Using SOA technology to integrate different software	● The CIO receives the full authority, support, and trust from the CEO ● Organizing multinational teams to address projects ● Adopting SCRUM methodology to facilitate the	● Quick response to changes of business processes ● Efficiency of operational processes ● Long-term return on IT investment

	packages and in-house development systems ● Taking the legacy ERP system as an enterprise database for organizational data collection and developing decision support systems based on the ERP database ● Outsourcing some system development projects to reduce labor costs and enhance efficiency while still emphasizing the autonomy of system analysis and maintenance	communication between developers and users to develop rapidly ● Providing training opportunities and updating best practices to adjust goals of the company ● Emphasizing employees' autonomy to deeply understand business processes to find out the best solution	

Table 1. Characteristics of Platform Organizing Logic for the Case Company

Research Findings: The Key Principles for IT Governance Decisions

To make IT effectively contribute to the organization's agility, the information system architecture also needs to be agile. That is, this architecture should be flexible enough to respond to the business needs. After our analysis, we identify four key principles the case company uses for making IT governance decisions as follows. Figure 1 represents a conceptual model to demonstrate how the case company implements their IT governance arrangements to achieve the IT agility necessary and then enables their organizational agility.

Balance between Collaboration Requirements and Cohesion Forces

Agility serves for two conflicting goals at the same time: stability and flexibility. Thus, a firm overemphasizing stability results in rigidity; however, a firm only emphasizing flexibility without stability leads to chaos (De Leeuw & Volberda, 1996). Thus, to achieve agility, firms need to balance between stability and flexibility.

Through our analysis, we classify the factors associated with IT agility into two major sections. The first section of factors deals with issues of how to increase organizational agility to fit with the organization's "collaboration requirements;" the second section of factors works as "cohesion forces" to serve for integration and maintenance issues for internal sub-systems. The collaboration requirements come from both internal and external environments. For example, different departments within the case firm have different collaboration needs and therefore operational agility is needed to reach these requirements. In addition, the case company's customers and upstream suppliers also have their own business needs, and therefore, customer and partner agility is needed to reach these needs.

To meet all of these collaboration requirements, heterogeneous information systems in the firms must be integrable and maintainable under fundamental constraints to transfer the necessary information. We refer to these fundamental constraints as "cohesion forces." Cohesion forces include: the rigidity of existing software packages (e.g., complexity and compatibility issues) and the time-delay effects of in-house or outsourced system developments. Moreover, how to utilize existing IT knowledge and assess the value of IT implementation are also part of cohesion forces.

These various forces have impacts on IT agility and make each decision become extremely critical. In other words, managers need to make a balanced decision to minimize these impacts to maintain their competitive advantage. Therefore, through our analysis, we identify the first principle used by the case company for making IT governance decisions is to make balance decisions between collaboration requirements and cohesion forces.

Autonomy of IS Integration and Scalability

IT will improve operational efficiency by automating and simplifying organizational activities, but at the same time, it will also hurt organizational agility by limiting a firm's strategic choices (Tallon & Pinsonneault, 2011). Thus, increased IT use increases the likelihood of the rigidity issue. Therefore, it is commonly believed that IT is a double-edged sword on organizational agility(Bharadwaj, 2000; Henderson & Clark, 1990; Sanchez, 2007). Moreover, Prahaland and Krishnan (2002) have also noted that the rigidity of application systems has become the main reason why IT infrastructures impede organizational agility.

In order to deal with these IT issues, the case company's second principle for making IT governance decisions is to maintain the autonomy of their IS integration and scalability. For example, when the case company decides to implement a new software package, maintaining the consistency of the software package and avoiding modifications that may cause future extension issues become the top priority to consider. Moreover, even when they decide to do outsourcing, they still insist that their IT people must keep the controllability of system analysis and scalability. These principles provide evidence of why the case company would not make a biased decision either on adopting best practice software or doing in-house developments and outsourcing. The early adopted ERP systems provide more evidence for our argument. Even though it is regarded as a legacy system, ERP systems can still be utilized in the case company, if IT people can maintain the systems and overcome the integration issue.

Thus, drawing upon platform organizational logic, all information systems should be considered as repository to support various business processes. These systems do not necessarily need to have homogeneous architectures, but they should provide dynamic combinations of operating procedures to enable required new business models.

Simplification of Business Processes by Digitized Process Capital

The business value of IT to the case company is another criterion for making IT governance decisions. Many companies just view IT as a supporting role and view IT department as a cost center. However, IT is viewed as a strategic role in the case company. Given the fact of the decreasing gross margins, the case company still continuously invests substantial amounts of money in IT to enhance their efficiency and maintain their leading position instead of cutting their IT budget.

IT staff wear two hats in the case company. They not only are system programmers that meet requirements from each department, but are also process designers for each department to optimize their current business processes. Additionally, IT staff's business knowledge is also critical for the case company to exploit their digitized process capital. Sambamurthy et al. (2003) proposed that path dependencies in the form of prior learning, investment and experience guide prospects for exploiting emergent opportunities. Thus, if IT staff can serve as IT experts and business experts at the same time, they could redefine the role of IT as a digital options generator and organizational agility enabler.

Entrepreneurial Alertness for Absorbing New IT Capabilities

Business-IT alignment contributes considerably to the implementation of large-scale investment plans. In order to fully utilize the value of these large-scale investment plans, the organizations tend to use their existing IT infrastructure to avoid potential risks. However, this use may make the organizations overlook the emerging opportunities, and therefore, impede their organizational agility. As a result, some researchers argued that business-IT alignment might impede organizational agility (Jarvenpaa & Ives, 1994). Thus, Sambamurthy et al. (2003) suggested that organizations need to have entrepreneurial action processes and capability-building processes to enhance their organizational agility. Entrepreneurial action processed designed to explore innovative solutions by entrepreneurial alertness; capability-building processes are designed to exploit existing IT capabilities or develop new IT capabilities via digital options.

Similar to the concept of digital options, although the case company emphasizes the long-term return of IT investment, they continue to study and evaluate emerging technologies so their decisions will not be restricted by sunk cost of prior IT investments. As the CIO noted, *"You always need to carefully evaluate the trends of IT, that is, you must figure out what trends are just advertising slogans and what trends can really bring value to your company. Then you can select what the company really needs, and how to keep up with changes."*

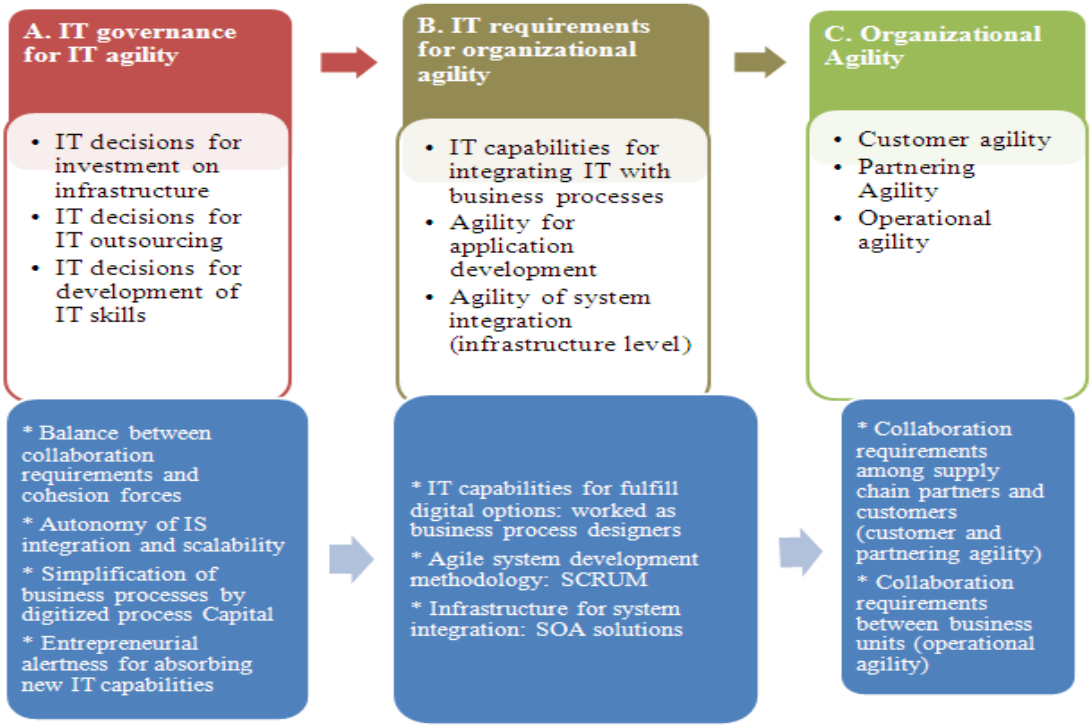

Figure 1. Conceptual Model

CONCLUSION

Both scholars and practitioners recognize the importance of information technology in enabling organizational agility. However, previous studies on how to use IT to achieve organizational agility have different or even conflicting perspectives. For example, scholars have different point of view on the causal relationship between business-IT alignment and IT-enabled agility (Lu & Ramamurthy, 2011; Tallon & Pinsonneault, 2011). Additionally, whether increasing alignment can help or hurt organizational agility is still an issue worthy of discussion (Tallon & Pinsonneault, 2011). The mixed results indicate that some factors still are not included or explained very well (Ghemawat & Del Sol, 1998; Gibson & Birkinshaw, 2004). In addition, prior studies also did not conduct an in-depth analysis to examine the factors that restrict IT agility, such as the complexity and rigidity of information systems.

In this case study, we analyzed the course of IT governance decisions to understand how the case company uses IT to enable organizational agility. Further, we adopted platform organizing logic perspectives to identify factors associated with this issue. These factors are classified as external collaboration requirements and internal cohesion forces. We also identify four key principles to sustain IT agility: balance between collaboration requirements and cohesion forces, autonomy of IS integration and scalability, simplification of business processes by digitized process capital, and entrepreneurial alertness for absorbing new IT capabilities. These findings illustrate how to apply platform organizing logic to IT governance decisions and also respond to the call for research in reframing the role of IT on shaping organizational agility through digital options (Sambamurthy et al., 2003).

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